

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
19 December 2002 (19.12.2002)

PCT

(10) International Publication Number  
WO 02/100186 A3(51) International Patent Classification<sup>7</sup>: A23J 1/14, 3/14,  
3/16, A23L 2/66, 1/314, 1/318, A23G 1/00, 9/00

(21) International Application Number: PCT/US01/43304

(22) International Filing Date:  
20 November 2001 (20.11.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/717,923	21 November 2000 (21.11.2000)	US
09/883,496	18 June 2001 (18.06.2001)	US
09/883,558	18 June 2001 (18.06.2001)	US
09/883,495	18 June 2001 (18.06.2001)	US
09/883,849	18 June 2001 (18.06.2001)	US
09/883,552	18 June 2001 (18.06.2001)	US

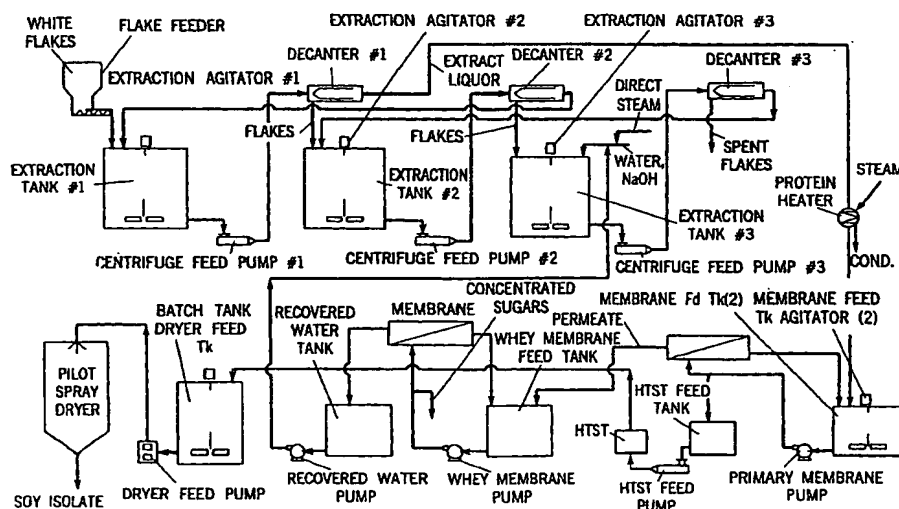
(71) Applicant (for all designated States except US):  
CARGILL, INC. [US/US]; 15407 McGinty Road  
W., Wayzata, MN 55391 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): PORTER, Michael, A. [US/US]; 9123 Sycamore Lane N., Maple Grove, MN 55369 (US). MURALIDHARA, Harapanahalli, S. [US/US]; 2325 Yuma Lane North, Plymouth, MN 55447 (US). PURTLE, Ian [US/US]; 1280 Zircon Lane North, Plymouth, MN 55447 (US). SATYAVOLU, Jagannadh, V. [US/US]; 1818 23rd Street NW, Cedar Rapids, IA 52405 (US). SPERBER, William, H. [US/US]; 5814 Oakview Circle, Minnetonka, MN 55345 (US). KARLESKIND, Daniele [FR/US]; 10500, 33rd Ave. N., Plymouth, MN 55441 (US). STARK, Ann, M. [US/US]; 2235 Plymouth Street, Marion, IA 52302 (US). FRIEDRICH, Jane, E. [US/US]; 19450 Rosedale Ave, Deephaven, MN 55331 (US). MARTINSON, Wade, S. [US/US]; 240 Washburn Avenue North, Minneapolis, MN 55405 (US). PEMBLE, Trent, H. [US/US]; 893 E. Court St., Sidney, OH 45365 (US). BJORK, Roger, E. [US/US]; 1240 E. Hoewisher, Sidney, OH 45365 (US). SMEDLEY, Troy, R. [US/US]; 510 South Main Street, Sidney, OH 45365 (US). FOSTER, William, G. [US/US]; 2309 County Road 4, Quincy, OH 43343 (US). INMAN, Thomas, C. [US/US]; 10945 Comanche Drive, Sidney, OH 45365 (US). KELLERMAN, James, C. [US/US]; 2328 Collins Drive, Sidney,

[Continued on next page]

(54) Title: MODIFIED OILSEED MATERIAL



(57) Abstract: A modified oilseed material formed from oilseed-based material is described. The modified oilseed material can be utilized in a variety of nutritional applications, including the preparation of protein supplemented food products such as beverages, processed meats, frozen desserts, confectionery products, dairy-type products, and cereal grain products. The modified oilseed material typically includes at least 85 wt.% protein (dry solids basis), at least about 40 wt.% of the protein in the modified oilseed material has an apparent molecular weight of at least 300 kDa, and/or the modified oilseed material has a MW50 of at least about 200 kDa.



OH 45365 (US). JOHNSON, Scott, D. [US/US]; 110  
Maple Farms Road, Ephrata, PA 17522 (US).

(74) Agent: STAHELI, M., Reed; Foley & Lardner, 777  
E. Wisconsin Avenue, 33rd Floor, Milwaukee, WI  
53202-5367 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI,  
SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,  
ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent  
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
5 June 2003

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 01/43304

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A23J1/14 A23J3/14 A23J3/16 A23L2/66 A23L1/314  
A23L1/318 A23G1/00 A23G9/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23J A23L A23G B01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 086 166 A (LAWHON JAMES T ET AL) 4 February 1992 (1992-02-04) column 5-6; claims 1-21; example 5 column 18 ---	1,6, 42-44
X	US 4 420 425 A (LAWHON JAMES T) 13 December 1983 (1983-12-13) the whole document ---	1,6, 42-44
X	RAZAVI S K S ET AL: "Fouling and cleaning of membranes in the ultrafiltration of the aqueous extract of soy flour" JOURNAL OF MEMBRANE SCIENCE, ELSEVIER SCIENTIFIC PUBL. COMPANY. AMSTERDAM, NL, vol. 114, no. 1, 29 May 1996 (1996-05-29), pages 93-104, XP004041594 ISSN: 0376-7388 page 95 -----	1,6, 42-44



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance  
 "E" earlier document but published on or after the international filing date  
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
 "O" document referring to an oral disclosure, use, exhibition or other means  
 "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.  
 "&" document member of the same patent family

Date of the actual completion of the international search

3 December 2002

Date of mailing of the international search report

01.04.2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

De Jong, E

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 01/43304

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☒ Claims Nos.: **1 (partly), 2-5, 7-21, 22-41, 42-44 (partly)**  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
**see FURTHER INFORMATION sheet PCT/ISA/210**
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

**see additional sheet**

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
**Claims 1-16, 42-44.**

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box 1.2

Claims Nos.: 1 (partly), 2-5, 7-21, 22-41, 42-44 (partly)

Reasons for the limitation of the search:

- Claims 1-5, 7-16 and 42-44 relate to a product defined (inter alia) by reference to the following parameter(s):

P1, P42: 40 wt.% of the protein in a 50 mg sample of the modified oilseed material is soluble in 1.0 ml water at 25 °C

P2: EOR

P3: breaking strength

P4: viscosity slope

P5: bacteria load

etc.

The use of these parameters in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible.

- Claims 17-21 are independent claims; in view of the large number and also the wording of the claims presently on file, which render it difficult, if not impossible, to determine the matter for which protection is sought, the present application fails to comply with the clarity and conciseness requirements of Article 6 PCT (see also Rule 6.1(a) PCT) to such an extent that a meaningful search is impossible.

- Claims 22-41 relate to a product/method defined (inter alia) by reference to the following parameter:

P22: a filtering surface with a contact angle of no more than 30 degrees

The use of these parameters in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. Your attention is also drawn to the Examples, where no contact angle is specified. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible.

Consequently, the search has been carried out for those parts of the application which do appear to be clear and concise (and see also the Non-Unity objection), namely part of the subject-matter of claim 1: "A modified oilseed material comprising at least 85 wt.% protein; wherein at least about 40 wt.% of the protein has an apparent molecular weight of greater than 300 kDa", the same part of claims 42-44 and the subject-matter of claim 6.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-16, 42-44

A modified oilseed material comprising at least about 85 wt.% protein; wherein at least about 40 wt.% of the protein has an apparent molecular weight of greater than 300 kDa; and a food composition containing the material.

2. Claims: 22-41

A method for producing a modified oilseed material, comprising extracting oilseed material with an aqueous solution to form a suspension of particulate matter in an oilseed extract; passing the extract through a filtration system including a microporous membrane with a specific filtering surface to produce a first permeate and a protein-enriched retentate; and the product obtained thereby.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/43304

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5086166	A	04-02-1992	NONE
US 4420425	A	13-12-1983	AT 27090 T 15-05-1987
		AU 568600 B2	07-01-1988
		AU 1882883 A	23-02-1984
		BR 8307480 A	14-08-1984
		DE 3371462 D1	19-06-1987
		DK 163084 A	22-03-1984
		EP 0115521 A1	15-08-1984
		JP 59501653 T	04-10-1984
		WO 8400474 A1	16-02-1984